

Notice of Allowability

Application No.

09/828,635

Examiner

Kevin M. Bernatz

Applicant(s)

SIN ET AL.

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 5/24/07.
2. ☒ The allowed claim(s) is/are 1,3,6,8-11 and 14-19.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment

1. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. No phone call was made since the amendment was merely to correct a typographical error in the claims without changing the scope of the claims.

The application has been amended as follows:

- Claim 11, line 14: before "antiferromagnetic", the word "and" was deleted.

Reasons for Allowance

3. The present claims are deemed allowable over the references of record since the references of record fail to disclose or render obvious the claimed structural and relative blocking temperature limitations.

See Paragraph 5 of the Office Action mailed March 30, 2007.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner's Comments

5. In order to better clarify the record, the Examiner wishes to point out the following reference: Huai et al. (U.S. Patent No. 6,381,105 B1) discloses a hybrid dual spin valve sensor comprising a structure substantially identical to the claimed structure, in that it comprises multiple magnetic layers interleaved with multiple non-magnetic layers with antiferromagnetic layers at both ends, wherein the antiferromagnetic layers are taught to possess different blocking temperatures (*Abstract; Figure 8; and col. 8, line 31 bridging col. 9, line 11*). However, the Examiner notes that the claimed structure is unique from the Huai et al. structure in that the presently claimed structure cannot be a dual spin-valve structure for the following reasons.

With regard to claims 1 and 17, the "free layer" (*i.e. the second ferromagnetic layer in claim 1 and said third ferromagnetic layer in claim 17*) possesses both free and fixed portions and free portions, wherein the additionally recited ferromagnetic layers ("*third*" in claim 1 and the "*first*" and "*second*" in claim 17) that are adjacent to the at least one of the antiferromagnetic layers are recited to overlap the fixed portions of the free layer, but not the free portion. Hence, claims 1 and 17 are distinguished from the structure recited in Huai et al. and Huai et al. fails to provide sufficient guidance to one of ordinary skill in the art to overcome the teaching away in the Mack et al. reference noted by the Examiner in Paragraph 5 of the Office Action mailed March 30, 2007.

With regard to claim 11, the Examiner notes that neither of the pinned + pinning layer structures disclosed by Huai et al. are bias layers, but instead are reference layers for the magnetoresistive sensor. As such, one of ordinary skill in the art would readily

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appreciate that the disclosed pinned + pinning layers would fail to meet the presently claimed limitation of "adapted to stabilize magnetic domains of said free layer in a second direction". Hence, claim 11 is distinguished from the structure recited in Huai et al. and Huai et al. fails to provide sufficient guidance to one of ordinary skill in the art to overcome the teaching away in the Mack et al. reference noted by the Examiner in Paragraph 5 of the Office Action mailed March 30, 2007.

Conclusion

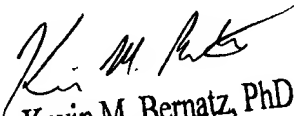
6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 8:30 AM - 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB

May 31, 2007


Kevin M. Bernatz, PhD
Primary Examiner